IN THE CLAIMS:

Please amend the claims as follows.

1-9. (Cancelled)

10. (Previously Presented) A method for balancing axial forces acting on each one of a plurality of roller cones on a roller cone drill bit during drilling, comprising:

simulating the drill bit drilling through an earth formation, the simulating comprising calculating, from a geometry of cutting elements on each of the roller cones and at least one characteristic of an earth formation simulated as being drilled by the drill bit, an axial force acting on each of the cutting elements,

simulating incrementally rotating the bit and recalculating the axial forces acting on each of the cutting elements; repeating the incrementally rotating and recalculating for a selected number of simulated incremental rotations;

combining the axial force acting on the cutting elements on each one of the roller cones; and

adjusting at least one bit design parameter, and repeating the simulating until a difference between the combined axial force on each one of the roller cones is less than a difference between the combined axial force determined prior to adjusting the at least one initial design parameter.

11. (Previously Presented) The method as defined in claim 10 wherein the axial force acting on each of the cutting elements totals an axial force applied to the drill bit.

12. (Previously Presented) The method as defined in claim 11 wherein an incremental axial movement of the drill bit corresponding to the incrementally rotating is adjusted to cause the axial force on each of the cutting elements to total the axial force applied to the drill bit, the axial force acting on each of the cutting elements determined with respect to a predetermined relationship between depth of penetration and axial force applied for the cutting element geometry and the earth formation.

13. (Previously Presented) The method as defined in claim 12 wherein the predetermined relationship is determined by laboratory experiment comprising impressing a cutting element having known geometry onto a selected earth formation, while measuring force on the cutting element and a corresponding depth of penetration of the cutting element into the selected earth formation.

14. (Previously Presented) The method as defined in claim 10 wherein the at least one bit design parameter comprises a number of cutting elements on at least one of the cones.

15. (Previously Presented) The method as defined in claim 10 wherein the at least one bit design parameter comprises a location of cutting elements on at least one of the cones.

16-24. (Cancelled)

25. (Presently Amended) A method for ~~optimizing a~~ designing ~~of~~ a roller cone drill bit, comprising:

simulating the bit drilling through an ~~selected~~ earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until a distribution of an axial force on the bit is substantially balanced between the roller cones.

26-28. (Cancelled)

29. (New) The method of claim 28, further comprising graphically displaying the simulating.

30. (New) The method of claim 28, wherein the adjusting comprises changing an orientation of at least one cutting element.